

AMENDMENTS TO THE CLAIMS

[There are no amendments to the claims. A complete claim set is presented for the convenience of the Examiner.]

Claim 1 (Previously Presented): A thermoplastic composition, comprising:

a poly(arylene ether);

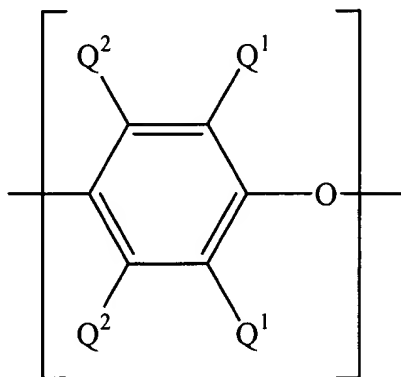
a poly(alkenyl aromatic) resin in an amount of at least about 30 weight percent of the total of the poly(arylene ether) and the poly(alkenyl aromatic) resin;

a propylene polymer; wherein the propylene polymer is a homopolymer of polypropylene, or a random, graft, or block copolymer of propylene and at least one olefin selected from ethylene and C₄-C₁₀ alpha-olefins, with the proviso that the copolymer comprises at least about 80 weight percent of repeating units derived from propylene; and wherein the composition comprises about 10 to about 70 weight percent of the propylene polymer;

a hydrogenated block copolymer of an alkenyl aromatic compound and a conjugated diene, wherein the hydrogenated block copolymer has an alkenyl aromatic content of 40 to about 90 weight percent, and wherein the hydrogenated block copolymer comprises a styrene-(ethylene-butylene)-styrene triblock copolymer; and

an unhydrogenated block copolymer of an alkenyl aromatic compound and a conjugated diene.

Claim 2 (Original): The thermoplastic composition of Claim 1, wherein the poly(arylene ether) comprises a plurality of structural units of the formula



wherein for each structural unit, each Q¹ is independently halogen, primary or secondary C₁-C₈ alkyl, phenyl, C₁-C₈ haloalkyl, C₁-C₈ aminoalkyl, C₁-C₈ hydrocarboxy, or C₂-C₈ haloalkyl where at least two carbon atoms separate the halogen and oxygen atoms; and each Q² is independently hydrogen, halogen, primary or secondary C₁-C₈ alkyl, phenyl, C₁-C₈ haloalkyl, C₁-C₈ aminoalkyl, C₁-C₈ hydrocarboxy, or C₂-C₈ haloalkyl where at least two carbon atoms separate the halogen and oxygen atoms.

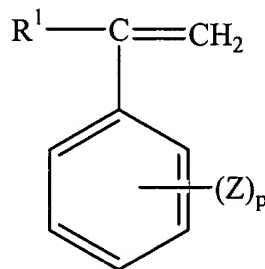
Claim 3 (Original): The thermoplastic composition of Claim 2, wherein each Q¹ is independently C₁-C₄ alkyl or phenyl, and each Q² is independently hydrogen or methyl.

Claim 4 (Original): The thermoplastic composition of Claim 1, wherein the poly(arylene ether) has an intrinsic viscosity of about 0.2 to about 0.6 dL/g as measured in chloroform at 25°C.

Claim 5 (Original): The thermoplastic composition of Claim 1, wherein the poly(arylene ether) comprises a copolymer of 2,6-dimethylphenol and 2,3,6-trimethylphenol.

Claim 6 (Original): The thermoplastic composition of Claim 1, comprising about 10 to about 59 weight percent poly(arylene ether), based on the total weight of the composition.

Claim 7 (Original): The thermoplastic composition of Claim 1, wherein the poly(alkenyl aromatic) resin comprises at least 25% by weight of structural units derived from an alkenyl aromatic monomer of the formula



wherein R^1 is hydrogen, $\text{C}_1\text{-C}_8$ alkyl, or halogen; Z is vinyl, halogen, or $\text{C}_1\text{-C}_8$ alkyl; and p is 0 to 5.

Claim 8 (Original): The thermoplastic composition of Claim 1, wherein the poly(alkenyl aromatic) resin comprises at least one poly(alkenyl aromatic) resin selected from the group consisting of atactic homopolystyrene, syndiotactic homopolystyrene, rubber-modified polystyrene, and mixtures comprising at least one of the foregoing poly(alkenyl aromatic) resins.

Claim 9 (Original): The thermoplastic composition of Claim 1, comprising about 4 to about 46 weight percent poly(alkenyl aromatic) resin, based on the total weight of the composition.

Claim 10 (Previously Presented): The thermoplastic composition of Claim 1, wherein the propylene polymer is a homopolypropylene.

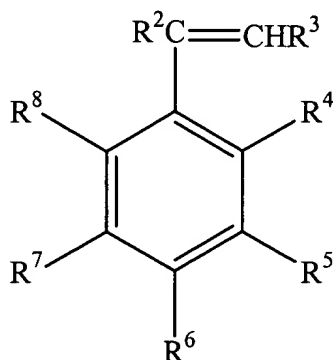
Claim 11 (Previously Presented): The thermoplastic composition of Claim 1, wherein the propylene polymer is a random, graft, or block copolymer of propylene and at least one olefin selected from ethylene and $\text{C}_4\text{-C}_{10}$ alpha-olefins.

Claim 12 (Previously Presented): The thermoplastic composition of Claim 1, wherein the propylene polymer is an isotactic homopolypropylene.

Claim 13 (Previously Presented): The thermoplastic composition of Claim 1, wherein the propylene polymer has a melt flow index of about 0.1 to about 50 g/10 min, measured according to ASTM D1238 at 2.16 kilograms and 200°C.

Claim 14 (Previously Presented): The thermoplastic composition of Claim 1, wherein the hydrogenated block copolymer comprises:

(A) at least one block derived from an alkenyl aromatic compound having the formula



wherein R^2 and R^3 each represent a hydrogen atom, a C_1 - C_8 alkyl group, or a C_2 - C_8 alkenyl group; R^4 and R^8 each represent a hydrogen atom, a C_1 - C_8 alkyl group, a chlorine atom, or a bromine atom; and R^5 - R^7 each independently represent a hydrogen atom, a C_1 - C_8 alkyl group, or a C_2 - C_8 alkenyl group, or R^4 and R^5 are taken together with the central aromatic ring to form a naphthyl group, or R^5 and R^6 are taken together with the central aromatic ring to form a naphthyl group; and

(B) at least one block derived from a conjugated diene, in which the aliphatic unsaturated group content in the block (B) is reduced by hydrogenation.

Claim 15 (Canceled)

Claim 16 (Original): The thermoplastic composition of Claim 1, wherein the hydrogenated block copolymer has a styrene content of about 50 to about 85 weight percent.

Claim 17 (Original): The thermoplastic composition of Claim 1, wherein the hydrogenated block copolymer has a styrene content of about 55 to about 70 weight percent.

Claim 18 (Original): The thermoplastic composition of Claim 1, comprising about 1 to about 20 weight percent of the hydrogenated block copolymer, based on the total weight of the composition.

Claim 19 (Original): The thermoplastic composition of Claim 1, wherein the unhydrogenated block copolymer comprises a styrene-butadiene diblock copolymer, a styrene-butadiene-styrene triblock copolymer, or a styrene-butadiene radial teleblock copolymer.

Claim 20 (Original): The thermoplastic composition of Claim 1, comprising about 1 to about 20 weight percent of the unhydrogenated block copolymer.

Claim 21 (Original): The thermoplastic composition of Claim 1, further comprising a hydrogenated block copolymer of an alkenyl aromatic compound and a conjugated diene, wherein the hydrogenated block copolymer has an alkenyl aromatic content of about 10 to less than 40 weight percent.

Claim 22 (Previously Presented): A thermoplastic composition, comprising:

a poly(arylene ether);

a poly(alkenyl aromatic) resin in an amount of at least about 30 weight percent of the total of the poly(arylene ether) and the poly(alkenyl aromatic) resin;

a polyolefin;

a hydrogenated block copolymer of an alkenyl aromatic compound and a conjugated diene, wherein the hydrogenated block copolymer has an alkenyl aromatic content of 40 to about 90 weight percent, and wherein the hydrogenated block copolymer comprises a styrene-(ethylene-butylene)-styrene triblock copolymer;

an unhydrogenated block copolymer of an alkenyl aromatic compound and a conjugated diene; and

a polypropylene-polystyrene graft copolymer.

Claim 23 (Previously Presented): A thermoplastic composition, comprising:

a poly(arylene ether);

a poly(alkenyl aromatic) resin in an amount of at least about 30 weight percent of the total of the poly(arylene ether) and the poly(alkenyl aromatic) resin;

a polyolefin;

a hydrogenated block copolymer of an alkenyl aromatic compound and a conjugated diene, wherein the hydrogenated block copolymer has an alkenyl aromatic content of 40 to about 90 weight percent, and wherein the hydrogenated block copolymer comprises a styrene-(ethylene-butylene)-styrene triblock copolymer;

an unhydrogenated block copolymer of an alkenyl aromatic compound and a conjugated diene; and

a polypropylene-polystyrene graft copolymer; wherein the polypropylene-polystyrene graft copolymer comprises a graft copolymer having a propylene polymer backbone and one or more styrene polymer grafts.

Claim 24 (Previously Presented): A thermoplastic composition, comprising:

a poly(arylene ether);

a poly(alkenyl aromatic) resin in an amount of at least about 30 weight percent of the total of the poly(arylene ether) and the poly(alkenyl aromatic) resin;

a polyolefin;

a hydrogenated block copolymer of an alkenyl aromatic compound and a conjugated diene, wherein the hydrogenated block copolymer has an alkenyl aromatic content of 40 to about 90 weight percent, and wherein the hydrogenated block copolymer comprises a styrene-(ethylene-butylene)-styrene triblock copolymer;

an unhydrogenated block copolymer of an alkenyl aromatic compound and a conjugated diene; and

a polypropylene-polystyrene graft copolymer; wherein the polypropylene-polystyrene graft copolymer comprises a graft copolymer having a propylene polymer backbone and one or more styrene polymer grafts; and wherein the polypropylene-polystyrene graft copolymer comprises about 10 to about 90 weight percent of the propylene polymer backbone and about 90 to about 10 weight percent of the styrene polymer grafts.

Claim 25 (Previously Presented): A thermoplastic composition, comprising:

a poly(arylene ether);

a poly(alkenyl aromatic) resin in an amount of at least about 30 weight percent of the total of the poly(arylene ether) and the poly(alkenyl aromatic) resin;

a polyolefin;

a hydrogenated block copolymer of an alkenyl aromatic compound and a conjugated diene, wherein the hydrogenated block copolymer has an alkenyl aromatic content of 40 to about 90 weight percent, and wherein the hydrogenated block copolymer comprises a styrene-(ethylene-butylene)-styrene triblock copolymer;

an unhydrogenated block copolymer of an alkenyl aromatic compound and a conjugated diene; and

about 0.5 to about 15 weight percent of a polypropylene-polystyrene graft copolymer, based on the total weight of the composition.

Claim 26 (Previously Presented): The thermoplastic composition of Claim 1, wherein the propylene polymer is homopolypropylene, and wherein the composition further comprises an ethylene/alpha-olefin elastomeric copolymer.

Claim 27 (Original): The thermoplastic composition of Claim 26, wherein the ethylene/alpha-olefin elastomeric copolymer comprises a copolymer of ethylene and at least one C₃-C₁₀ alpha-olefin.

Claim 28 (Original): The thermoplastic composition of Claim 26, wherein the ethylene/alpha-olefin elastomeric copolymer comprises an ethylene-butylene rubber, an ethylene-propylene rubber, or a mixture thereof.

Claim 29 (Original): The thermoplastic composition of Claim 26, comprising about 1 to about 20 weight percent of the ethylene/alpha-olefin elastomeric copolymer.

Claim 30 (Original): The thermoplastic composition of Claim 1, further comprising at least one additive selected from the group consisting of stabilizers, mold release agents, processing aids, flame retardants, drip retardants, nucleating agents, UV blockers, dyes, pigments, particulate fillers, reinforcing fillers, conductive fillers, anti-static agents, blowing agents, and antioxidants.

Claim 31 (Original): The thermoplastic composition of Claim 1, wherein the composition is substantially free of reinforcing fillers.

Claim 32 (Original): The thermoplastic composition of Claim 1, wherein the composition after molding has less than about 10% batch-to-batch variability in Izod Notched Impact Strength at 23°C measured according to ASTM D256.

Claim 33 (Original): The thermoplastic composition of Claim 1, wherein the composition after molding has less than about 5% batch-to-batch variability in Flexural Modulus at 23°C measured according to ASTM D790.

Claim 34 (Original): The composition of Claim 1, wherein the composition after molding has a flexural modulus at 23°C greater than about 100 kpsi and an Izod notched impact strength greater than about 1 ft-lb/in.

Claim 35 (Previously Presented): A thermoplastic composition, comprising:

a poly(arylene ether);

a poly(alkenyl aromatic) resin;

a propylene polymer; wherein the propylene polymer is a homopolymer of polypropylene, or a random, graft, or block copolymer of propylene and at least one olefin selected from ethylene and C₄-C₁₀ alpha-olefins, with the proviso that the copolymer comprises at least about 80 weight percent of repeating units derived from propylene; and wherein the composition comprises about 10 to about 70 weight percent of the propylene polymer;

a hydrogenated block copolymer of an alkenyl aromatic compound and a conjugated diene, wherein the hydrogenated block copolymer has an alkenyl aromatic content of about 40 to about 90 weight percent, and wherein the hydrogenated block copolymer comprises a styrene-(ethylene-butylene)-styrene triblock copolymer; and

an unhydrogenated block copolymer of an alkenyl aromatic compound and a conjugated diene;

wherein the poly(arylene ether) and the poly(alkenyl aromatic) resin form a single phase having a glass transition temperature at least about 20°C greater than the glass transition temperature of the poly(alkenyl aromatic) resin alone.

Claim 36 (Previously Presented): A thermoplastic composition, comprising:

a poly(arylene ether);

a poly(alkenyl aromatic) resin;

a propylene polymer; wherein the propylene polymer is a homopolymer of polypropylene, or a random, graft, or block copolymer of propylene and at least one olefin selected from ethylene and C₄-C₁₀ alpha-olefins, with the proviso that the copolymer comprises at least about 80 weight percent of repeating units derived from propylene; and wherein the composition comprises about 10 to about 70 weight percent of the propylene polymer;

a hydrogenated block copolymer of an alkenyl aromatic compound and a conjugated diene, wherein the hydrogenated block copolymer has an alkenyl aromatic content of about 40 to about 90 weight percent, and wherein the hydrogenated block copolymer comprises a styrene-(ethylene-butylene)-styrene triblock copolymer; and

an unhydrogenated block copolymer of an alkenyl aromatic compound and a conjugated diene;

wherein the poly(arylene ether) and the poly(alkenyl aromatic) resin form a single phase having a glass transition temperature up to about 15°C greater than the melting temperature of the propylene polymer alone.

Claim 37 (Previously Presented): A thermoplastic composition, comprising:

a poly(arylene ether);

a poly(alkenyl aromatic) resin;

a propylene polymer; wherein the propylene polymer is a homopolymer of polypropylene, or a random, graft, or block copolymer of propylene and at least one olefin selected from ethylene and C₄-C₁₀ alpha-olefins, with the proviso that the copolymer comprises at least about 80 weight percent of repeating units derived from propylene; and wherein the composition comprises about 10 to about 70 weight percent of the propylene polymer;

a hydrogenated block copolymer of an alkenyl aromatic compound and a conjugated diene, wherein the hydrogenated block copolymer has an alkenyl aromatic content of about 40 to about 90 weight percent, and wherein the hydrogenated block copolymer comprises a styrene-(ethylene-butylene)-styrene triblock copolymer; and

an unhydrogenated block copolymer of an alkenyl aromatic compound and a conjugated diene;

wherein the poly(arylene ether) and the poly(alkenyl aromatic) resin form a single phase having a glass transition temperature of about 130°C to about 180°C.

Claim 38 (Previously Presented): A thermoplastic composition, comprising:

a poly(arylene ether);

a poly(alkenyl aromatic) resin;

a propylene polymer; wherein the propylene polymer is a homopolymer of polypropylene, or a random, graft, or block copolymer of propylene and at least one olefin selected from ethylene and C₄-C₁₀ alpha-olefins, with the proviso that the copolymer comprises at least about 80 weight percent of repeating units derived from propylene; and wherein the composition comprises about 10 to about 70 weight percent of the propylene polymer;

a hydrogenated block copolymer of an alkenyl aromatic compound and a conjugated diene, wherein the hydrogenated block copolymer has an alkenyl aromatic content of about 40 to about 90 weight percent, and wherein the hydrogenated block copolymer comprises a styrene-(ethylene-butylene)-styrene triblock copolymer;

an unhydrogenated block copolymer of an alkenyl aromatic compound and a conjugated diene; and

a polypropylene-polystyrene graft copolymer.

Claim 39 (Previously Presented): A thermoplastic composition, comprising:

about 10 to about 59 weight percent of a poly(arylene ether);

about 3 to about 46 weight percent of a poly(alkenyl aromatic) resin, with the proviso that the weight ratio of the poly(alkenyl aromatic) resin to the poly(arylene ether) is at least about 3:7;

about 10 to about 70 weight percent of a propylene polymer; wherein the propylene polymer is a homopolymer of polypropylene, or a random, graft, or block copolymer of propylene and at least one olefin selected from ethylene and C₄-C₁₀ alpha-olefins, with the proviso that the copolymer comprises at least about 80 weight percent of repeating units derived from propylene;

about 1 to about 20 weight percent of a hydrogenated block copolymer of alkenyl aromatic compound and a conjugated diene, wherein the hydrogenated block copolymer has an alkenyl aromatic content of about 40 to about 90 weight percent, and wherein the hydrogenated block copolymer comprises a styrene-(ethylene-butylene)-styrene triblock copolymer; and

about 1 to about 20 weight percent of an unhydrogenated block copolymer of an alkenyl aromatic compound and a conjugated diene;

wherein all weight percents are based on the total weight of the composition.

Claim 40 (Previously Presented): A thermoplastic composition, comprising:

about 10 to about 59 weight percent of a poly(arylene ether);

about 1 to about 46 weight percent of a poly(alkenyl aromatic) resin;

about 10 to about 70 weight percent of a propylene polymer; wherein the propylene polymer is a homopolymer of polypropylene, or a random, graft, or block copolymer of propylene and at least one olefin selected from ethylene and C₄-C₁₀ alpha-olefins, with the proviso that the copolymer comprises at least about 80 weight percent of repeating units derived from propylene;

about 1 to about 20 weight percent of a hydrogenated block copolymer of alkenyl aromatic compound and a conjugated diene, wherein the hydrogenated block copolymer has an alkenyl aromatic content of about 40 to about 90 weight percent, and wherein the hydrogenated block copolymer comprises a styrene-(ethylene-butylene)-styrene triblock copolymer;

about 1 to about 20 weight percent of an unhydrogenated block copolymer of an alkenyl aromatic compound and a conjugated diene; and

about 0.5 to about 15 weight percent of a polypropylene-polystyrene graft copolymer;

wherein all weight percents are based on the total weight of the composition.

Claim 41 (Previously Presented): A thermoplastic composition, comprising:

about 10 to about 59 weight percent of a poly(arylene ether);

about 1 to about 46 weight percent of a poly(alkenyl aromatic) resin;

about 1 to about 20 weight percent of an unhydrogenated block copolymer of alkenyl aromatic compound and a conjugated diene;

about 10 to about 70 weight percent of a propylene polymer; wherein the propylene polymer is a homopolymer of polypropylene, or a random, graft, or block copolymer of propylene and at least one olefin selected from ethylene and C₄-C₁₀ alpha-olefins, with the proviso that the copolymer comprises at least about 80 weight percent of repeating units derived from propylene;

about 1 to about 20 weight percent of an ethylene/alpha-olefin elastomeric copolymer;

about 1 to about 20 weight percent of a hydrogenated block copolymer of alkenyl aromatic compound and a conjugated diene, wherein the hydrogenated block copolymer has an alkenyl aromatic content of about 40 to about 90 weight percent, and wherein the hydrogenated block copolymer comprises a styrene-(ethylene-butylene)-styrene triblock copolymer; and

about 0.5 to about 15 weight percent of a polypropylene-polystyrene graft copolymer;

wherein all weight percents are based on the total weight of the composition.

Claim 42 (Previously Presented): A thermoplastic composition, comprising the reaction product of:

a poly(arylene ether);

a poly(alkenyl aromatic) resin in an amount of at least about 30 weight percent of the total of the poly(arylene ether) and the poly(alkenyl aromatic) resin;

a propylene polymer; wherein the propylene polymer is a homopolymer of polypropylene, or a random, graft, or block copolymer of propylene and at least one olefin selected from ethylene and C₄-C₁₀ alpha-olefins, with the proviso that the copolymer comprises at least about 80 weight percent of repeating units derived from propylene; and wherein the composition comprises about 10 to about 70 weight percent of the propylene polymer;

a hydrogenated block copolymer of an alkenyl aromatic compound and a conjugated diene, wherein the hydrogenated block copolymer has an alkenyl aromatic content of about 40 to about 90 weight percent, and wherein the hydrogenated block copolymer comprises a styrene-(ethylene-butylene)-styrene triblock copolymer; and

an unhydrogenated block copolymer of an alkenyl aromatic compound and a conjugated diene.

Claim 43 (Original): An article comprising the composition of Claim 42.

Claim 44 (Original): An article comprising the composition of Claim 42, wherein the article is formed using at least one method selected from the group consisting of injection molding, blow molding, extrusion, sheet extrusion, film extrusion, profile extrusion, pultrusion, compression molding, thermoforming, pressure forming, hydroforming, vacuum forming, and foam molding.

Claim 45 (Original): An article comprising the composition of Claim 42, wherein the article is formed using blow molding or foam molding.

Claim 46 (Original): A sheet comprising the composition of Claim 42.